METHOD DEVELOPMENT OF SINGLE DROP MICROEXTRACTION FOR PESTICIDES ANALYSIS USING HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

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ABSTRACT

METHOD DEVELOPMENT OF SINGLE DROP MICROEXTRACTION (SDME) FOR PESTICIDES ANALYSIS USING HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

The simple method Single Drop Microextraction and High Performance Liquid Chromatography has been developed for analysis of two different pesticides; methidathion and vinclozolin. The effect of mobile phase composition and flow rate of pump has been studied to determine the separation efficiency of analytes. Two different mobile phase composition of acetonitrile-water of 55:45 and 70:30 (v/v) ratios with flow rate of 0.8 mL/min and 1.0 mL/min respectively were studied in order to determine the best parameter for the developed method. The best experimental conditions of the proposed HPLC method were 10 µL injection volumes, mobile phase acetonitrile-water with composition 55:45 (v/v) as eluent at flow rate of 0.8 mL/min. The extraction time of SDME technique was studied and optimized while the other parameters such as organic solvent, stirring rate, droplet volume and volume of aqueous sample were constant during the study. The extraction time was varied in the range of 10 to 30 minutes with 5 minutes interval. The separation of extracted samples was achieved by injected 1 µL of sample in HPLC in order to reduce peak broadening. The optimized parameter of SDME technique in this study were 25 minutes of extraction time, toluene as organic solvent, 200 rpm stirring rate, 3 µL microdrop volume and 4 mL aqueous samples. The SDME technique with HPLC-UV analysis has provided a simple, reliable, reproducible and low in cost for analysis of pesticides.